Science Blog

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Word/Logic Bank to Help Build 'Thinking' Machines

Information scientists announced an agreement last month on a “concept bank” programmers could use to build thinking machines that reason about complex problems at the frontiers of knowledge—from advanced manufacturing to biomedicine.

The agreement by ontologists—experts in word meanings and in using appropriate words to build actionable machine commands—outlined the critical functions of such a bank. It was reached at a two-day Ontology Summit held during NIST’s Interoperability Week in Gaithersburg, Md. The decision to create a unique Internet facility called the Open Ontology Repository (OOR) culminated more than three months of Internet discussion.

The ontology wordsmiths envision an electronic OOR in which diverse collections of concepts (ontologies) such as dictionaries, compendiums of medical terminology, and classifications of products, could be stored, retrieved, and connected to various bodies of information. OOR users, tasked with creating a computer program for manufacturing machines, for example, would be able to search multiple computer languages and formats for the unambiguous words and action commands. Plans call for OOR’s inventory to support the most advanced logic systems such as Resource Description Framework, Web Ontology Language and Common Logic, as well as standard Internet languages such as Extensible Markup Language (XML).

Steve Ray, NIST manufacturing systems integration chief who hosted the meeting, says, “The Ontology Summit established the critical set of requirements and ground rules needed before we can begin serious construction of the repository. It will save enormous amounts of time and money and facilitate new, complex systems in all sectors for manufacturing control, supply chain management, and even biomedical management systems.”

Key elements of the agreement include a review of the current state of the art in ontology repositories; the quality and gate-keeping criteria for registering and distributing the ontology material; and an infrastructure that allows reviews of diverse ontologies (an ontology of ontologies). The researchers pledged to continue work on the project via the Internet and expect to review their progress at next year’s NIST Interoperability Week conference.

For further information see the Ontology Summit Communique, at http://ontolog.cim3.net/cgi-bin/wiki.pl?OntologySummit2008_Communique